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**Featured Story: ASTMH**



## Beyond the Battlefield: Using Research to Improve Wounded Warrior Care and Quality of Life (Cover)

*From Naval Health Research Center Public Affairs*

SAN DIEGO – Thanks to advances in military medicine and personal protective gear, service members injured in combat during Operation Enduring Freedom, Operation Iraqi Freedom, and Operation New Dawn, have the highest survival rate in modern history.

Approximately 55,000 military personnel have been injured in these conflicts—as many as 16,000 of them so severely, they likely would not have survived had they sustained the same wounds in previous conflicts.

Surviving the battlefield is often just the beginning for injured service members, the first step on the road to recovery and healing. The journey may be long because, in addition to the impact of their physical trauma, many of these wounded warriors also bear psychological scars that may manifest as depression or post-traumatic stress disorder (PTSD).

Military leaders and medical personnel were quick to realize that these battlefield injuries could have long-term consequences for service members. That's when Michael Galarneau, Director of Operational Readiness and Deployment Health at the Naval Health Research Center (NHRC), stepped up with a solution—the Wounded Warrior Recovery Project (WWRP), a longitudinal study to better understand the impact of the physical and psychological injuries on combat-injured service members' quality of life. (cont.)

[Full Article](#)

## NAMRU-2 Researcher Presents Rare Case Study of Dengue Infection at ASTMH 2016

*From Naval Medical Research Center Public Affairs*

SILVER SPRING, MD- The 65th annual meeting of the American Society of Tropical Medicine and Hygiene (ASTMH) held in Atlanta, Georgia, Nov 13-17, provided more than a few examples of how much can be accomplished through collaboration.

The U.S. Naval Medical Research Unit No. 2 (NAMRU-2) under the guidance of Lt. Cmdr. Jamal Deجلي, Head of Laboratory Services, identified a subject with a co-infection of two dengue serotypes. This subject was enrolled through the passive cohort Febrile Syndromic Surveillance (FSS) study conducted by NAMRU-2 in collaboration with the Cambodian Ministry of Health.

During poster sessions at ASTMH, Deجلي presented the results on the first serotype 1 and 2 co-infection of dengue fever found in Cambodia. (cont.)

[Full Article](#)



## ASTMH - NMRC and WRAIR Work Together to Fight Dengue Virus

*From Naval Medical Research Center Public Affairs*

SILVER SPRING, Md.- Researchers from the Naval Medical Research Center (NMRC) and Walter Reed Army Institute of Research teamed up in a study to develop an assay to better characterize how the immune system responds to dengue virus infections. The results of this collaboration were presented during a poster session at the American Society of Tropical Medicine and Hygiene (ASTMH) annual meeting in Atlanta, Georgia, November 13 – 17. The ASTMH meeting provides an opportunity for researchers from all areas to find collaborators and gain new perspectives.

The collaboration for this study came about through common interests. The Navy and Army deploy service members to areas where dengue fever is prevalent.



“This was a true collaboration in the sense that Army and Navy researchers actively participated in the design, the analysis, and the continued evaluation of the data as the study moved forward,” said Lt. Cmdr. Maya Williams, Head of Viral and Rickettsial Diseases, NMRC.

According to Nishith Nagabhushana, Research Assistant, Department of Viral and Rickettsial Diseases, NMRC, there is currently no assay to evaluate the role of antibody-dependent cellular cytotoxicity (ADCC) in the human body's immune response to dengue virus infection. (cont.)

[Full Article](#)

## NMRC Researcher Shares Results from Traveler's Diarrhea Study

*From Naval Medical Research Center Public Affairs*

SILVER SPRING, Md- The American Society of Tropical Medicine and Hygiene (ASTMH), annual meeting, Atlanta, Georgia, November 13-17, gave Naval Medical Research Center (NMRC) researcher Capt. Mark Riddle the opportunity to present the first results from a collaborative travelers' diarrhea treatment trial involving deployed U.S. and U.K. military troops.

Spanning from 2012-2015, the clinical trial was conducted in four different regions of the world – Afghanistan, Djibouti, Honduras, and Kenya, and focused on improving the treatment of travelers' diarrhea.

“We completed a randomized controlled trial to test three different antibiotic regimens to treat travelers' diarrhea among deployed military members,” said Riddle.

The main results showed that all three antibiotic regimens with loperamide significantly reduced the duration of illness which normally lasts about three to five days down to symptoms lasting about a half a day. (cont.)

[Full Article](#)





# R&D Chronicles: The Mosquito Fighters, Part XI

## Klamath Falls and the Navy’s Forgotten Filariasis Problem

By André B. Sobocinski, Historian, BUMED

Tutuila Island (Samoa), 1880. After conducting a medical survey of the island, USS Alaska’s surgeon Thomas Hiland reported that four-fifths of the population over the age of 45 suffered from a condition marked—in severe cases—by skin/tissue thickening, swelling of limbs (elephantiasis) and scrotal swelling (hydrocele).



*“Filariasis in the personnel of our Armed Forces is a problem which has arisen since operations were started in the South and Central Pacific area.”*

*~Vice Adm. Ross McIntire, Navy Surgeon General, to Hon. William Stigler (D-OK), June 20, 1944.*

Decades away from the discovery of the actual cause, Hiland attributed the condition to the “warm, moist climate” of Tutuila and advised use of quinine, rest and purging. In six cases of hydrocele, he and fellow physician Asst. Surgeon S.H. Griffith surgically removed the hypertrophied mass (the largest weighing 40 pounds!)

Today we know this horrifying disease by the name lymphatic filariasis. A potentially chronic condition, filariasis is caused by parasitic roundworms that can be transmitted by Aedes, Anopheles and Culex species of mosquitoes. According to the World Health Organization (WHO), the Wucheria bancrofti parasite is responsible for 90 percent of lymphatic filariasis cases worldwide.

When injected into a host’s bloodstream, the microfilariae (larval stage worms) can grow up to four inches in length and lodge in the lymph glands where they continually reproduce over a lifespan of 5 to 7 years. These blockages can lead to an accumulation of lymph fluid leading to elephantoid enlargement of limbs and body parts.

Most individuals who contract filariasis, however, remain asymptomatic and diagnosis is usually only made through identification of microfilariae in blood smears. Less than 10 percent of cases actually manifest in elephantiasis. Although the Navy has never been overrun with the disease it has not been immune to it either. Remarkably, between 1915 and 1945, there were only two years in which sailors or Marines were not diagnosed with filariasis. In World War II—with the swell of deployed military populations in endemic areas—Navy physicians diagnosed some 12,040 cases (over 90 percent of those being Marines).

Filariasis not only comprised an individual’s lymphatic system, it posed a serious psychological threat for service personnel who feared manifestations of elephantiasis, spreading the infection and subsequent social stigma. Navy doctors also reported an overwhelming, yet unfounded fear of sterility among afflicted personnel.

Although there was no cure for the disease, Navy researchers noted that the cooler climates at higher altitudes made for amenable conditions in the recovery process. (cont.)

[Full Article](#)

# NAMRU-6 Researcher Shows What Next Generation Sequencing Technologies Can Do

From Naval Medical Research Center Public Affairs

SILVER SPRING, Md-During a scientific session at the American Society of Tropical Medicine and Hygiene (ASTMH) meeting in Atlanta, Georgia, Dr. Mariana Leguia Ph.D, Head of the Genomics and Pathogen Discovery Unit at the U.S. Naval Medical Research Unit No. 6 (NAMRU-6) in Lima, Peru, provided insight on how next generation sequencing (NGS) technologies can be used to advance public health research.

“This technology expands the capabilities of what we can do in a variety of areas related to genomics research, and in particular, for pathogen detection,” said Leguia.

Pathogens are disease producing agents— viruses, bacteria, parasites, and other such microorganisms. (cont.)

[Full Article](#)



## Collaboration, Research and Development Leads to Acquisition Excellence Award for Fielding of a Device that Detects Traumatic Brain Injury

From Naval Medical Research Center Public Affairs

SILVER SPRING, Md – Competition, affordability, technical expertise, innovative techniques, and professional acumen are keys to excellence for acquisition activities. Once a year, outstanding contributions made by military and civil service individuals and teams dedicated to enhancing competition and innovation throughout the Navy and Marine Corps are honored and recognized.

The 2016 Acquisition Excellence Award Ceremony took place November 17 at the Pentagon, and was attended by the Under Secretary of the Navy, Dr. Janine Davidson, and the Assistant Secretary of the Navy (Research, Development and Acquisition), the Honorable Sean J. Stackley, and various awardees.

Among the team awardees was Christian Miller, Lieutenant Commander, Naval Medical Research Center (NMRC), for his work at the Marine Corps Combat Development Command (MCCDC) with Marine Corps Systems Command (MCSC) in the development of a field device capable of detecting Traumatic Brain Injury (TBI), non-invasively. (cont.)

[Full Article](#)



## NAMRU-2 Scientists Highlight Ongoing Dengue Research in Cambodia at ASTMH

*From Naval Medical Research Center Public Affairs*

SILVER SPRING, Md. – During poster sessions at the American Society of Tropical Medicine and Hygiene (ASTMH), in Atlanta, Georgia, Nov. 13-17, researchers from the U.S. Naval Medical Research Unit -2 (NAMRU-2), located in Phnom Penh, Cambodia, showcased results from longstanding research into dengue fever in Cambodia.

Dengue fever is recognized as an infectious disease threat to operational military forces in regions where the disease is endemic. Navy Medicine's research, including the research conducted by NAMRU-2, seeks to identify the risk that dengue fever poses to deployed military forces and aims to develop strategies to mitigate these threats.



Dengue fever, also called breakbone fever, is a mosquito-borne viral infection endemic to tropical regions. According to the World Health Organization (WHO) the global burden of dengue is estimated to nearly 400 million dengue infections per year and approximately 4 billion people in over 120 countries are at risk of infection with dengue viruses. There is no specific treatment for dengue. Symptoms are flu-like and include high fever, rash, and muscle and joint pain. In severe cases there is serious bleeding and shock, which can be life threatening. (cont.)

[Full Article](#)

## NMRC-A Researchers Collaborate with Malaysian Partners to Better Understand the Threat of MERS

*From Naval Medical Research Center Public Affairs*

SILVER SPRING, Md. - The annual meeting of the American Society of Tropical Medicine and Hygiene (ASTMH) offers researchers around the globe an opportunity to showcase their work. The 65th annual ASTMH meeting was held in Atlanta, Georgia, Nov. 13 – 17. Attending this year's meeting were personnel from the U.S. Naval Medical Research Center – Asia (NMRC-A), based in Singapore, and its detachment, the U.S. Naval Medical Research Unit -2 (NAMRU-2), based in Phnom Penh, Cambodia.

Among the work presented by NMRC-A and NAMRU-2 was a study considering the risk that the Middle East Respiratory Syndrome (MERS) coronavirus poses a threat to travelers going to and from Saudi Arabia during the Hajj pilgrimage.

Since its appearance in 2012, the MERS virus has emerged as a serious public health threat of global concern. Specifically, the NMRC-A study, led by Lt. Cmdr. Brian Pike, who leads NMRC's Emerging Infectious Diseases Program, investigates how the spread of the MERS virus may be facilitated by high population mobility and mass gatherings, such as the Hajj pilgrimage. (cont.)

[Full Article](#)

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